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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BOOSALIS, FANI POLYZOS	
ART UNIT	**PAPER NUMBER**
2884	

DATE MAILED: 09/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/711,554	ERTEL ET AL.	
	Examiner	Art Unit	
	Faye Boosalis	2884	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/04 1/05 1/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1 are rejected under 35 U.S.C. 102(b) as being anticipated by *Trauernicht et al (US 5,650,626 A)*.

Regarding claim 1, Trauernicht discloses a radiographic detector panel support (20) comprising a body composed of a composite material (i.e. metal radiation shielding) sufficient to structurally support components of a radiographic detector; and a radiation absorbing material (i.e. inorganic or organic polymer, metal, and glass and can be a composite of two or more materials) interspersed within the body (col. 5, lines 11-45).

Regarding claim 2, Trauernicht discloses the radiation absorbing material is a layer of lead (col. 15, lines 17-19).

Regarding claim 3, Trauernicht discloses a layer of thermal insulating material (i.e. air gaps) secured to the body (col. 5, lines 21-23).

3. Claims 8 are rejected under 35 U.S.C. 102(b) as being anticipated by *Polichar et al (US 5,608,774 A)*.

Regarding claim 8, Polichar discloses an x-ray detector system comprising: a scintillator (42') configured to convert radiographic energy to light; a detector array (52)

having a plurality of detector elements to detect light from the scintillator; a control board having a plurality of electronic components (62) to control the detector array during data acquisition and data readout; and a panel support (54) disposed between the detector array and the control board, the panel support at least partially formed of a radiation absorbing material (i.e. glass or ceramic) (col. 11, lines 27-50 and claim 20).

4. Claims 17 are rejected under 35 U.S.C. 102(b) as being anticipated by *Zarnoch et al (US 5,581,592 A).*

Regarding claim 17, Zarnoch discloses a method of manufacturing a flat panel x-ray detector comprising the steps of: providing a bulk of non-x-ray absorbing material (i.e. non-absorbent polyimides, polycarbonates, other polymers, ceramics, woods, graphite, glass, metals, or composites thereof) designed to support internal components of an x-ray detector and wherein the non-x-ray absorbing material is capable of supporting the internal components when a deflective force is applied to the x-ray detector; incorporating x-ray absorbing material (i.e. carbon, glass, or ceramic) into the bulk; and forming an x-ray detector panel support having non-x-ray and x-ray absorbing material (col. 4, lines 30-45).

Regarding claims 18-19, Zarnoch discloses the method further comprising the steps of: fashioning a first layer of non-x-ray absorbing material and a second layer of non-x-ray absorbing material from the bulk of non-x-ray absorbing material; and securing an x-ray absorbing layer to the first and the second layers of non-x-ray absorbing material to form a composite layered structure (substrate) (See Generally Fig. 2 and col. 4, lines 30-45).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Trauernicht et al (US 5,650,626 A)* as applied to claim 1 above, and further in view of *Kwasnick et al (US 5,303,282 A)*.

Regarding claim 5, Trauernicht discloses a radiographic detector panel support (20) comprising a body composed of a composite material (i.e. metal radiation shielding) sufficient to structurally support components of a radiographic detector; and a radiation absorbing material (i.e. inorganic or organic polymer, metal, and glass and can be a composite of two or more materials) interspersed within the body (col. 5, lines 11-45). Trauernicht does not disclose the absorbing material is tungsten. Kwasnick discloses a radiation imaging system comprising a radiation detector panel support (110) including a radiation absorbing material (130) consisting tungsten (col. 6, lines 4-24). Kwasnick teaches the radiation absorbent material typically has a relatively high atomic number, e.g., greater than about 72, and advantageously comprises tungsten, lead, or gold when the radiation used in the imager device is x-ray (col. 6, lines 4-24). Therefore, it would have been obvious to modify the detector panel support disclosed by Trauernicht, to include Tungsten as the radiation absorbing material, as disclosed supra by Kwasnick, to allow for a more versatile apparatus.

7. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Trauernicht et al (US 5,650,626 A)* as applied to claim 1 above, and further in view of *Zarnoch et al (US 5,581,592 A).*

Regarding claims 4 and 6, Trauernicht discloses a radiographic detector panel support (20) comprising a body composed of a composite material (i.e. metal radiation shielding) sufficient to structurally support components of a radiographic detector; and a radiation absorbing material (i.e. inorganic or organic polymer, metal, and glass and can be a composite of two or more materials) interspersed within the body (col. 5, lines 11-45). Tungsten does not disclose the mass of the absorbing material or the composite material includes graphite. Zarnoch discloses anti-scatter x-ray device for radiography including detector panel support (substrate) comprising a body composed of a composite material wherein the composite material includes graphite with a mass sufficient to prevent detection of radiation reflected off a back cover (col. 4, lines 39-42). Zarnoch teaches the substrate may comprise any substantially non-absorbent material having appropriate structural and thermal properties to withstand further processing and use. The words "substantially non-absorbent" mean that the substrate thickness and material are sufficient to prevent substantial attenuation of x-radiation such that at least 85% (and preferably at least 95%) of the x-radiation will pass through the substrate. In one embodiment the substrate comprises a plastic such as Ultem.RTM. polyetherimide (Ultem is a trademark of General Electric Co.). Other examples of appropriate substrate material include substantially non-absorbent polyimides, polycarbonates, other polymers, ceramics, woods, graphite, glass, metals, or composites thereof. The

substrate may further include filler material such as particles or fibers including carbon, glass, or ceramic, for example, which can be useful to provide proper mechanical characteristics (col. 4, lines 39-42). Therefore, it would have been obvious to modify the detector panel support disclosed by Trauernicht to include composite material made of graphite, as disclosed supra by Zarnoch, to allow for a more versatile detector panel support for an x-ray detector system.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Trauernicht et al (US 5,650,626 A)* as applied to claim 1 above, and further in view of *Polichar et al (US 6 5,608,774 A)*.

Regarding claim 7, Trauernicht discloses a radiographic detector panel support (20) comprising a body composed of a composite material (i.e. metal radiation shielding) sufficient to structurally support components of a radiographic detector; and a radiation absorbing material (i.e. inorganic or organic polymer, metal, and glass and can be a composite of two or more materials) interspersed within the body (col. 5, lines 11-45). Trauernicht does not disclose the separation of scintillation components of the radiographic detector from the control board. Polichar discloses an x-ray detector system comprising: a scintillator (42') configured to convert radiographic energy to light; a detector array (52) having a plurality of detector elements to detect light from the scintillator; a control board having a plurality of electronic components (62) to control the detector array during data acquisition and data readout; and a panel support (54) disposed between the detector array and the control board, the panel support at least partially formed of a radiation absorbing material (i.e. glass or ceramic) (col. 11, lines

27-50 and claim 20). Polichar teaches a flat panel sensor offers the advantage of being flat and relatively thin so that it can be positioned into tight spots, and further eliminates the need for a mirror(s) and/or lenses to define an optical path. The sensor includes a conventional X-ray scintillation screen (42') that is in direct contact with a flat panel, amorphous silicon, TFT (thin film transistor) photo sensor (52). The TFT photo sensor (52) is made on a glass or ceramic substrate (54), and includes a matrix of thin film transistors (60). Each TFT further has its own thin film sample and hold photodiode (62) associated therewith. The matrix of TFT's and diodes is sufficiently dense so that each TFT (60) and associated photodiode (62) corresponds to a different pixel of the sensor. The photodiode (62) senses and accumulates all of the light flashes produced at the corresponding pixel of the scintillation screen (42') during the integration time. At the end of the integration time, the accumulated signal at each pixel site that is held by the corresponding photodiode (62) is read through its corresponding TFT transistor (60) through appropriate row drive electronics 56 and column drive electronics (58), in conventional manner. Such accumulated signals, for all of the pixels of the sensor, thus comprise the integrated image signal for a given exposure time (col. 11, lines 27-50 and claim 20). Therefore, it would have been obvious to modify the detector panel support disclosed by Trauernicht to include the configuration disclosed supra by Polichar, to allow for a more versatile radiographic detector.

9. Claims 9-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Polichar et al (US 5,608,774 A)* as applied to claim 8 above, and further in view of *Trauernicht et al (US 5,650,626 A)*.

Regarding claims 9-10, Polichar discloses an x-ray detector system comprising: a scintillator (42') configured to convert radiographic energy to light; a panel support at least partially formed of a radiation absorbing material (i.e. glass or ceramic) (col. 11, lines 27-50 and claim 20). Polichar does not disclose of the panel support including a layer of radiation absorbing material. Trauernicht discloses an x-ray detector system comprising: a panel support (20) including at least one layer of radiation absorbing material having a surface area equivalent to that of the detector array (14) (See Fig. 2 and col. 5, lines 41-50). Trauernicht teaches the support unit (20) could have alternating layers such that a moderately x-ray absorbing layer is adjacent to a less x-ray absorbing layer (col. 5, lines 24-26) and the substrate (22) can be composed of a variety of materials, such as inorganic or organic polymer, metal, and glass and can be a composite of two or more materials as long as the substrate meets the following criteria. The substrate (22) comprises predominantly of one or more elements having atomic numbers of 22 or less (also referred to herein as "lighter elements"), and includes one or more elements having atomic numbers greater than (22) (also referred to herein as "heavier elements") (col. 5, lines 41-50). Therefore, it would have been obvious to modify the system disclosed by Polichar to include panel support with at least one layer of radiation absorbing material, as disclosed supra by Trauernicht, to allow for a more versatile x-ray detector system.

Regarding claim 11, Trauernicht discloses the radiation absorption material is composed of a variety of materials, such as inorganic or organic polymer, metal, and

glass and can be a composite of two or more materials as long as the substrate meets the following criteria (col. 5, lines 41-50).

Regarding claim 12, Polichar discloses each detector element (62) includes a light sensitive area and an electronics area supported by a glass substrate (54), and wherein the electronics area includes an electronic switch connected to a capacitive element and the control board (col. 11, lines 27-50 and claim 20).

Regarding claim 13, Polichar discloses the electronic switch includes a thin-film-transistor (TFT) designed to bias the capacitive element in an energy storage mode during data acquisition and connect the capacitive element to readout electronics of the control board during a readout mode (col. 11, lines 32-50).

Regarding claim 14, Polichar discloses the panel support is configured to support the glass substrate. Although Polichar does not disclose specifically disclose the substrate can withstand a point-load of 300 lbs. it would be inherent since the support, disclosed by Polichar, comprise the same material composition (made of glass) and should also be able to withstand a point-load of 300 lbs. without fragmentation.

Regarding claim 15, Trauernicht discloses the x-ray detector can comprise a glass or organic scintillator (See Table A and col. 8, lines 15-18).

Regarding claim 16, Polichar discloses a cover (40) housing the scintillator, detector array, the control board and panel support and cover having a handle to facilitate portability (col. 9, lines 39-64).

10. Claims 20-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Zarnoch et al (US 5,581,592 A)* as applied to claim 17 above, and further in view of *Polichar et al (US 5,608,774 A)*.

Regarding claim 20, Zarnoch discloses a method of manufacturing a flat panel x-ray detector comprising the steps of: providing a bulk of non-x-ray absorbing material (i.e. non-absorbent polyimides, polycarbonates, other polymers, ceramics, woods, graphite, glass, metals, or composites thereof) designed to support internal components of an x-ray detector and wherein the non-x-ray absorbing material is capable of supporting the internal components when a deflective force is applied to the x-ray detector; incorporating x-ray absorbing material (i.e. carbon, glass, or ceramic) into the bulk; and forming an x-ray detector panel support having non-x-ray and x-ray absorbing material (col. 4, lines 30-45). Zarnoch does not disclose of disposing a scintillation material layer and detector array material layer to the panel support. Polichar discloses a method of disposing a glass substrate (54) and a detector array (52) on the first layer of non-x-ray absorbing material; disposing a layer of scintillation material (42') adjacent the detector array; arranging the first layer and the second layer of non-x-ray absorbing material, the x-ray absorbing layer, the glass-substrate and detector array, the layer of scintillation material and a control board in a stacked arrangement (col. 11, lines 27-50 and claim 20); and disposing the stacked arrangement in a housing (40) having a handle (col. 9, lines 39-64).

Polichar teaches a flat panel sensor offers the advantage of being flat and relatively thin so that it can be positioned into tight spots, and further eliminates the

need for a mirror(s) and/or lenses to define an optical path. The sensor includes a conventional X-ray scintillation screen (42') that is in direct contact with a flat panel, amorphous silicon, TFT (thin film transistor) photo sensor (52). The TFT photo sensor (52) is made on a glass or ceramic substrate (54), and includes a matrix of thin film transistors (60). Each TFT further has its own thin film sample and hold photodiode (62) associated therewith. The matrix of TFT's and diodes is sufficiently dense so that each TFT (60) and associated photodiode (62) corresponds to a different pixel of the sensor. The photodiode (62) senses and accumulates all of the light flashes produced at the corresponding pixel of the scintillation screen (42') during the integration time. At the end of the integration time, the accumulated signal at each pixel site that is held by the corresponding photodiode (62) is read through its corresponding TFT transistor (60) through appropriate row drive electronics 56 and column drive electronics (58), in conventional manner. Such accumulated signals, for all of the pixels of the sensor, thus comprise the integrated image signal for a given exposure time (col. 11, lines 27-50 and claim 20). Therefore, it would have been obvious to modify the detector panel support disclosed by Trauernicht to include the configuration disclosed supra by Polichar, to allow for a more versatile radiographic detector.

Regarding claim 21, Zarnoch discloses the x-ray absorbing material includes graphite (col. 4, lines 39-42).

11. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Zarnoch et al (US 5,581,592 A) and Polichar et al (US 5,608,774 A)* as applied to claim 17 above, and further in view of T*rauernicht et al (US 5,650,626 A).*

Regarding claim 22, Polichar discloses the x-ray absorbing material can include (i.e. carbon, glass, or ceramic). Neither Zarnoch nor Polichar disclose the material including one of lead, tungsten, and barium sulfate. Trauernicht discloses the radiation absorbing material is a layer of lead (col. 15, lines 17-19). Trauernicht teaches lead is strong absorbent material (col. 15, lines 17-19). Therefore, it would have been obvious to modify the method suggested by Polichar and Zarnoch, to include a method wherein the x-ray absorbing material includes lead, to allow for a more efficient means of detecting radiation.

Regarding claim 23, Trauernicht discloses step of adding an x-ray absorbing material in powder form to the bulk of non-x-ray absorbing material, mixing the powder of x-ray absorbing material with the non-x-ray absorbing material, and curing the mixture (col. 7, lines 51-60).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Faye Boosalis whose telephone number is 571-272-2447. The examiner can normally be reached on Monday thru Friday from 7:30 AM to 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on 571-272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

14. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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PRIMARY EXAMINER